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USSR ELECTRIC POWER OUTPUT INCREASES

/Numbers in parentheses refer to appended sources./

Twenty years ago, the Central Committee of the Communist Party and the state issued a directive on the development of the "Bol'shoy Volga" (Great Volga) which dealt with the development of the middle Volga, the lower Kama, and the lower Oka rivers into a series of deep lakes or reservoirs. The aim was to improve water navigation, produce electric power, and to irrigate vast areas of semidrought lands. The "Bol'shoy Volga" scheme was further expanded and it was decided to build the Ivan'kovskiy, Uglich, Shcherbakov, Gor'kovskiy, Cheboksary, Kuybyshev-Valakovskiy, and Stalingrad GES. Of these, the Ivan'kovskiy, Uglich, and Shcherbakov GES have already been completed. The Gor'kovskiy, Kuybyshev, and Stalingrad GES are presently under construction on the Volga and the Kama GES, Pavlovskiy GES and others are being planned and made ready for construction. A series of water reservoirs have been created around Moscow. They are the Moscow, Uglich, Shcherbakov, Klyaz'ma, and Khimki reservoirs.

During the Fourth Five-Year Plan, much emphasis was given to the construction of hydroelectric and irrigation installations. The plan called for the restoration of all hydroelectric power stations destroyed during the war, the completion of 30 GES already in various stages of construction, and the construction of 13 new large-scale GES. In addition, the plan called for the restoration and expansion of irrigation, water supply, and drainage systems. The area under irrigation was to be increased 656,000 hectares. Successes were achieved. Stations destroyed during the war, including the DneproGES, were restored and the Khrami, Farkhad, and Niva III GES and the Nevinnomyssk and other irrigation systems were put into operation.

Azerbaydzhan SSR

Much attention has been given to the complexities of effectively utilizing the water resources in the basin of the Kura and Araks rivers, Azerbaydzhan SSR. The Mingechaur GES on the Kura River will effectively use the lower part

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of the river for supplying electric power to the Baku industrial region. The dam will be 77 meters high and will form a large water reservoir which will supply 1.3 million hectares of the Araksinsk lowlands. The Mingechaur Reservoir will regulate the flow of the Kura River, thus eliminating flood conditions in the lower course of the river, improving navigating conditions, and making the region a more healthy one in which to live.(1)

Georgian SSR

According to data of the Power Engineering Institute of the Academy of Sciences Georgian SSR, Georgia possesses water-power resources amounting to nearly 12 million kilowatts, permitting a potential production of electric power of more than 100 billion kilowatts annually. The republic is successfully fulfilling its program for hydroelectric power development. Many large regional electric power stations were built during the Five-Year Plans, including the Zemo-Avchaly GES imeni V. I. Lenin (one of the first in the USSR), the Rion Ges imeni I. V. Stalin, and the Adzharis-Tskhal GES. Since the war, the Khrami, Sukhumi, and Chitakhevi GES and others have been put into operation. Steam-electric power stations completed include the Tkvarcheli Heat and Power Plant, which operates on Tkvarcheli coal dust, and the Heat and Power Plant of the Transcaucasus Metallurgical Plant.(2) In 1950, the total capacity of electric power plants in Georgia was 326,000 kilowatts as against 8,000 kilowatts in 1913.(9) In 1949, more than 70 percent of the electric power production in Georgia came from hydroelectric stations and production of electric power was 62 times greater than in 1913.

All regional electric power stations in Georgia are joined to a single system, which permits the most efficient utilization of the power capacity and assures electric power to heavy industry, cities, electrified Transcaucasian railroads, and other economic branches.

The presently operating hydroelectric power stations and those under construction in Georgia can be divided into three groups. The first includes stations whose production follows a seasonal pattern. These stations(ZaGES, RionGES, AtsGES, SukhumGES, ChitakheviGES) are built on large Georgian rivers in the immediate vicinity of main industrial centers. They produce less than one third electric power in the autumn-winter period than during the high-water period. The second group includes stations used both for irrigation purposes and for the production of electric power. The Alazanskiy GES in Kakhetia, which supplies electricity to kolkhozes and sovkhozes of Kakhetia, was built on a drop in the Alazanskiy irrigation canal and the Tiriponskiy GES was built on the Tiriponskiy irrigation canal. The KhramGES is a typical example of stations (regulating stations) in the third group. Because of its large water reservoir, it can produce a large amount of power during the winter-autumn period, thus keeping the capacity of the electric power system at an even rate during the entire year.

At present, emphasis is being put on building groups of electric power plants instead of single ones, to more efficiently utilize the potential water resources.(2)

The first aggregate of the KhramGES was put in operation on 31 December 1947 and the station has worked without failure since that time. All aggregates are in operation at present. The KhramGES operates under higher pressure than any station in the USSR; its high-pressure pen stocks were built with great difficulty. The pressure tunnels of the KhramGES are unique in Europe and the USSR and are a credit to Soviet hydro engineering. Because of its large reservoir, the KhramGES assures a supply of electric power during the evening hours when the load is highest, and in the winter during low-water periods.(3)

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The Ortachal'sk GES is being built at the 300 Aragvintsev Bridge where the Kura River emerges from a rocky gorge. Construction of this station is closely connected with the modernization and development of the city of Tbilisi, and work is being conducted on a 24-hour basis. The Tbilisi division of "Gidroenergoproyekt" did the planning work for the project and is helping the construction engineers solve technical problems connected with the project. A dam for stabilizing the right bank of the Kura River has already been built and work has started on the left bank. Since building started, the construction plan has been completed 150-180 percent. All main processes are mechanized. Many machines are in operation and the project will shortly receive several tower cranes and a large mechanized concrete plant. Workers at the project are quite experienced, as most of them worked on the Khrami and Sukhumi GES. Many young former kolkhoz workers from various regions of eastern Georgia are also working on the project.(4)

Armenian SSR

The total capacity of the electric power plants in Armenia increased 43.3 percent from 1948 to 1950; in the same period, electric power production increased 78 percent. This increase was made possible by the completion of the SevanGES, the installation of the third aggregate of the DzoraGES, the expansion of the KanakerGES, and the improvement of other electric power stations. The SevanGES, completed in 1949, increased the total capacity of electric power stations in Armenia by 20%. Planning and research work is being conducted on the Vorotan and Okhchi rivers and the Council of Ministers Armenian SSR is working out measures to shorten the construction time of the Gyumush and Arzniyskiy GES and other projects. It is planned to start construction of the Arzniyskiy GES in 1952, to put its first aggregate in operation in 1955, and to put the station in full operation in 1956. Construction of the Karvansarayskiy GES will be started in 1955 and its first aggregate will be put into operation in 1958. In addition, plans have been presented to the state for the construction of the medium-size Vorotan GES on the Canal imeni Stalin, and for putting the medium-size DzoraGES and other hydroelectric stations in full operation. It has been decided to construct electric power stations on the Okhchi River, and to construct the Ayrum GES and an electric power station at the Plant imeni Kirov. This program will assure an electric power supply to the growing industrial demands of Armenia.

To speed up the construction of the Gyumush GES, Agababov, construction chief of the station, and Karamyan, the chief engineer, have been requested to eliminate deficiencies in organizing construction work at the project. Tunnel construction, the most difficult task, must be speeded up, machines must be more efficiently used, and technical leadership properly placed. The working force on the construction project will be increased considerably this year.

Before the new power capacity is put into operation, it will be the task of Perikhanyan, manager of Armenergo, Ter-Akopova, chief engineer, and others of the same organization to utilize the available electric power efficiently and to assure an uninterrupted supply of electric power to the more important branches of industry. Armenergo must, in cooperation with other ministries involved, make adjustments in electric power distribution with the aim of establishing strict norms for the electric power consumers.(5)

During 1951, all hydroelectric systems in Armenergo will be converted to automatic control. YerGES 1 and LenGES have already been converted.(6)

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Kirgiz SSR

One of the most important conditions for developing the industry of Kirgiz SSR is the consolidation of the power-engineering base. With the aim of expanding industry, a series of large GES were put into operation in the republic during the 1946 - 1950 Five-Year Plan. These include the Voroshilov, two Alamedin, the Przheval'sk, and other GES. The capacity of all electric power stations in the republic increased 50 percent during the Fourth Five-Year Plan and production of electric power was more than doubled.(7)

Belorussian SSR

The total capacity of electric power stations in Belorussia increased 80 percent in the period 1940 - 1950. In 1951, the capacity of the power stations will be nearly 250 percent of prewar and the capacity of the Minsk electric power center will be nearly eight times greater than in 1940. Utilization of local fuels was emphasized in this rapid expansion and in 1950, 80 percent of the steam-electric power stations burned peat, a plentiful fuel in the Belorussian SSR. All large electric power stations presently under construction will burn peat. Milled peat, which costs only one half as much per ton as lump peat, was utilized by 30 percent of the steam-electric power stations in 1950 as against 5 percent in 1940.

Efforts are being made to produce electric power in fewer and larger stations, thus improving the stations' efficiency and permitting a sharp drop in the cost per kilowatt-hour of electric power. In 1951, nearly 60 percent of the electric power capacity will be concentrated in electric power stations with capacities of more than 5,000 kilowatts and 37 percent in the four largest stations in the republic.

The capacity of electric power stations in the western oblasts of Belorussia increased 2.3 times from 1940 to 1950. The Molodechno and Baranovichi power stations were rebuilt and the Brest and Grodno stations doubled their prewar capacities.

It is planned to build four main electric power systems in the Belorussian SSR. They will be interconnected and also joined to systems of neighboring republics. These systems are:

1. Northern Electric System -- To include BelGRES, Vitebsk GES, Beshenkovichi GES, Mogilev TETs, and other electric power stations. It will supply electric power to Vitebsk, Orsha, Mogilev, Shklov, Polotsk.

2 Minsk Electric System -- To include Minsk TETs No 2, Smolevichi GRES, and others. It will supply electric power to Minsk, Borisov, Molodechno, and others.

3. Southern Electric System -- To include the Vasilevichi GRES and hydroelectric stations on the Dnepr River. It will supply electric power to Gomel', Rechitsa, Bobruysk, Zhlobin, and Rogachev.

4. Western Electric System -- To include hydroelectric stations on the Neman River and many city electric power stations. It will supply electric power to Grodno, Lida, Volkovysk, Novogrudok, Sonnim, Baranovichi, Brest, Kobrin, Pinsk.

In 1951, the following electric power stations will be put into operation in the Belorussian SSR: Stolin TES (Pinsk Oblast), Usyazhskiy TETs (Minsk Oblast), and Mstislavl' GES (Mogilev Oblast). The Gomel and Bobruysk TETs and the Polotsk TES (steam-electric power station) will be expanded and the first

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aggregate of the Smolivichi GRES will be put into operation. The latter station will supply electric power to Minsk and Borisov. In 1952, construction will be started on a hydroelectric station on the West Dvina River near Vitebsk. In 1952 - 1953, construction will begin on the Vasilevichi GRES.(8)

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